

### AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the application:

#### Listing of Claims:

1. (currently amended) An isolated nucleic acid which encodes a phytase having a specific activity of at least about 10 U/mg protein,  
wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM CaCl<sub>2</sub>, and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes,  
wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under ~~standard~~ high stringency conditions in ~~6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting.
2. (previously presented) The isolated nucleic acid according to claim 1, wherein the nucleic acid is a DNA molecule.
3. (currently amended) A vector comprising:  
an isolated DNA molecule which encodes a phytase having a specific activity of at least about 10 U/mg protein,  
wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM CaCl<sub>2</sub>, and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes,  
wherein the isolated DNA molecule hybridizes to SEQ. ID. No. 1 under ~~standard~~ high stringency conditions in ~~6xSSC, 0.5% SDS, 50° C. overnight~~ for Southern blotting,  
wherein the DNA molecule is functionally linked to regulatory sequences capable of expressing a phytase from said DNA sequence.
4. (previously presented) The vector according to claim 3 wherein the, DNA molecule further comprises a leader sequence capable of providing for the secretion of said phytase.

5. (currently amended) An isolated prokaryotic host cell transformed by a nucleic acid, wherein the nucleic acid is an isolated nucleic acid which encodes a phytase having a specific activity of at least about 10 U/mg protein,

wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes,

wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under standard high stringency conditions ~~either in 6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting.

6. (previously presented) An isolated prokaryotic host cell according to claim 5, wherein the host cell is selected from the group comprising *E. coli*, *Bacillus* sp., *Lactobacillus* sp. and *Lactococcus* sp.

7. (currently amended) An isolated eukaryotic host cell transformed by a nucleic acid, wherein the nucleic acid is an isolated nucleic acid which encodes a phytase having a specific activity of at least about 10 U/mg protein,

wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes,

wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under standard high stringency conditions ~~either in 6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting.

8. (previously presented) An isolated eukaryotic host cell according to claim 7, wherein the host cell is selected from the group comprising *Aspergillus* sp., *Humicola* sp., *Pichia* sp., *Trichoderma* sp. *Saccharomyces* sp. and plants such as soybean, corn and rapeseed.

9. (currently amended) A method for the production of phytase comprising:

transforming a prokaryotic host cell with an isolated nucleic acid, wherein the isolated nucleic acid encodes a phytase having a specific activity of at least about 10 U/mg protein, wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes, wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under ~~standard~~ high stringency conditions ~~in 6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting;

culturing or cultivating the prokaryotic host cell under conditions effective for producing phytase; and  
recovering phytase.

10. (currently amended) A method for the identification of a nucleic acid which encodes a phytase, wherein a probe comprising a nucleic acid of SEQ ID NO. 1 or a fragment thereof is hybridized to a sample suspected of containing said nucleic acid which encodes a phytase, under ~~standard~~ high stringency hybridization conditions ~~in 6xSSC, 0.6% SDS, 50° C. overnight or functional equivalents thereof~~ for Southern blotting,

wherein the nucleic acid which encodes a phytase has a specific activity of at least about 10 U/mg protein,

wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes, wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under ~~standard~~ high stringency conditions ~~in 6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting.

11. (currently amended) A method for the production of phytase comprising:

transforming an isolated eukaryotic host cell with an isolated nucleic acid, wherein the isolated nucleic acid encodes a phytase having a specific activity of at least about 20 U/mg protein, wherein said specific activity is determined by incubating said phytase in a solution

containing about 100 mM maleic acid-Tris, at a pH of about 5.0, about 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes, wherein the isolated nucleic acid hybridizes to SEQ. ID. No. 1 under ~~standard~~ high stringency conditions in ~~6xSSC, 0.6% SDS, 50° C. overnight~~ for Southern blotting;

culturing or cultivating the eukaryotic host cell under conditions effective for producing phytase; and

recovering phytase.

12. (previously presented) An isolated nucleic acid of claim 1 wherein the nucleic acid encodes a phytase having a specific activity of at least about 20 U/mg protein and wherein said specific activity is determined by incubating said phytase in a solution containing about 100 mM Tris-HCl at a pH of about 7.5 1 mM  $\text{CaCl}_2$ , and about 1.6 mM sodium phytate at about 37° C. for about 30 minutes.

13. (canceled)

14. (canceled)